SUB A2

CLAIMS:

1. ~~A wavemeter (50) for determining a wavelength of an incoming optical beam (100) comprising:~~

~~a coarse-measuring unit (130) for determining in a first wavelength range and with a first accuracy a first wavelength value as representing the wavelength of the incoming optical beam (100),~~

~~a fine-measuring unit (200) for providing a wavelength determination with a second accuracy for the incoming optical beam (100), wherein the wavelength determination is ambiguous within the first wavelength range but unambiguous in each of a plurality of unambiguous wavelength ranges, so that a plurality of different wavelength values correspond to a measuring value as measured by the fine-measuring unit (200) for the incoming optical beam (100) and wherein the second accuracy is higher than the first accuracy,~~

~~an evaluation unit (350) for determining a second wavelength range covering the first wavelength value, and for determining a second wavelength value as the one of the plurality of different wavelength values that corresponds to the measuring value in the second wavelength range, and~~

~~output means (360) for providing the second wavelength value as measuring result of the wavemeter (50)representing the wavelength of the incoming optical beam (100),~~

~~wherin the coarse-measuring unit (130) comprises one or more materials having a wavelenght-dependency of reflection and/or transmission.~~

2. The wavemeter (50) of claim 1, wherein the fine-measuring unit (200) comprises means for providing a periodic wavelength dependency,

preferably an interferometric unit, the periodicity of the wavelength-dependency being larger than a measuring fault or inaccuracy of the coarse-measuring unit (130).

3. The wavemeter (50) of claim 1 or 2, wherein the coarse-measuring unit (130) comprises a dielectric coating having one or more layers of materials, preferably of MgF_2, SiO, or CeF_3, with different refractive indices and thickness.

4. The wavemeter (50) of claim 1 or any one of the claims 2-3, wherein the coarse-measuring unit (130)comprises a glass plate with a dielectric coating on one side and an anti-reflection coating on another side, thus representing a wavelength-dependent beamsplitter

5. The wavemeter (50) of claim 1 or any one of the claims 2-4, further comprising an absolute-measuring unit (300) having unambiguous wavelength properties, preferably absolutely known transmission features preferably provided by a gas absorption cell.

6. A method for determining a wavelength of an incoming optical beam (100) comprising the steps of:

(a) determining in ~~a~~ first wavelength range and with a first accuracy a first wavelength value as representing the wavelength of the incoming optical beam (100)

(b) providing a wavelength determination with a second accuracy for the incoming optical beam (100), wherein the wavelength determination is ambiguous within ~~the~~ first wavelength range but unambiguous in each of a plurality of unambiguous wavelength ranges, so that a plurality of different wavelength values correspond to a measuring value as measured for the incoming optical beam (100), and wherein the second accuracy is higher than the first accuracy,

(c) determining a second wavelength range covering the first wavelength value,

(d) determining a second wavelength value as the one of the plurality of different wavelength values that corresponds to the measuring value in the second wavelength range, and

(e) providing the second wavelength value as measuring result representing the wavelength of the incoming optical beam (100).

7. The method of claim 6, further comprising a step of:

(f) providing a reference measurement an absolute-measuring unit (300) having unambiguous and absolutely known wavelength properties, preferably absolutely known transmission features preferably provided by a gas absorption cell.

8. The method of claim 7, wherein step (f)is executed prior to step (a) or calibration before an actual measurement, and/or concurrently with step (a) and/or step (b) for providing a continuous calibration preferably during the actual measurement.

9. The method of claim 7 or 8, wherein step (f) comprises the steps of:

(f1) sweeping an input signal over a wavelength range wherein the absolute-measuring unit (300) has at least one of the unambiguous and absolutely known wavelength properties,

(f2) analyzing a measuring result derived from step (f1) together with a measuring result derived from step (a) and/or step (b) for determining a relation between the unambiguous and absolutely known wavelength properties and the derived measuring result(s).

10. The method of claim 7 or any one of the claims 8-9, wherein step (f) is

executed for calibrating a wavemeter (50)according to anyone of the claims 1-5, and/or for adjusting measuring results as provided by the wavemeter (50).

~~11. The method of claim 7 or any one of the claims 8-10, wherein step (c) comprises the step of determining the second wavelength range as a wavelength range around the first wavelength value.~~

~~12. The method of claim 11, wherein the second wavelength range is determined by adding and subtracting a value, preferably corresponding to half of the period of the unambiguous wavelength range covering the first wavelength value, to and from the first wavelength value.~~

~~13. A software product, preferably stored on a data carrier, for executing the method of claim 6 or any one of the claims 7-12, when run on a data processing system such as a computer.~~

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